

REMARKS

Claims 1-20 are pending in the present patent application. Claims 2-6, 8, 9, 11-15, 17, 19 and 20 were amended herein to more clearly recite the invention, and to correct for matters of minor informality. No new matter was added.

In the Official Action, the drawings were objected to under 37 CFR 1.84 (p)(4) and 37 CFR 1.84 (p)(5). Claims 4-6 were objected to for a minor informality. Claims 1-16 and 18-20 were rejected under 35 U.S.C. § 103(a). Specifically, claims 1-2, 7-8, 10-13 and 16 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 6,085,066 (Fong) in view of U.S. Patent No. 5,305,464 (Frett). Claims 3 and 14 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Fong in view of Frett and further in view of U.S. Patent No. 5,780,783 (Heider). Claims 4 and 15 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Fong in view of Frett and Heider and further in view of U.S. Patent No. 4,692,760 (Unno). Claims 4 and 15 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Fong in view of Frett and Heider and further in view of U.S. Patent No. 4,692,760 (Unno). Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Fong in view of Frett, Heider and Unno and further in view of U.S. Patent No. 4,325,062 (Devlin). Claims 9 and 18-20 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Fong in view of Frett and further in view of Devlin.

Initially, Applicants gratefully acknowledge the Examiner's indication that claim 17 contains allowable subject matter and specifically that "the step of determining a channel to which the set-top converter box is tuned comprising: (a) determining if a scan line for a display element is active; (b) if the scan line is active at step (a), then determining which of the segment lines are active to determine character being displayed by the display element; and (c) repeating steps (a) and (b) for each display element in the electronic display" is allowable over the art of record.

Objections to Drawings

In response to the objections to the drawings, submitted herewith is a Request for Approval of Drawing Changes, making appropriate changes to Fig. 4 to correct for mislabeling of a reference numeral. Specifically, reference character "27" of

Communications Module (MODEM) has been replaced with reference character "26" in accordance with the text found at least on lines 16 and 23 of page 11 of the written description. No new matter has been added.

Additionally, the specification has been amended herein to conform the written description to the Figures. Specifically, the specification has been amended on page 11, line 17, to change the labeling of "CODEC 30" to "CODEC 29" to conform the labeling to "CODEC 29" of Fig. 4. In view of the proposed drawing changes and amendment to the specification, the drawing objections are believed moot, and accordingly, withdrawal of the objections to the drawings is respectfully requested.

Objection to Claims

Claims 4 and 15 were amended herein to remove the word "said" prior to the word "wherein." Withdrawal of the objection to the claims is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

The outstanding rejections to the claims under 35 U.S.C. § 103(a) are respectfully traversed.

In accordance with the present invention, a display interface device is provided for use in determining a currently tuned-to channel of a set-top converter box having an electronic display, where the electronic display indicates the currently tuned-to channel in response to drive signals provided thereto by the set-top converter device. The display interface device comprises an electrical connection to the electronic display and a controller that is connected to the electronic display by the electrical connection. Specifically, *the controller of the display interface device receives the drive signals transmitted to the electronic display by the set-top converter device and interprets the drive signals to generate information representative of the currently tuned-to channel.*

In contrast, Fong describes a technique for audio matching to detect tuned to channels; however, nothing in the teachings of Fong suggests the reception and interpretation of drive signals transmitted to the electronic display of a set-top converter device by a controller of a display interface device in accordance with the invention. While Fig. 2 of Fong depicts a set-top converter 14, nowhere does Fong teach or suggest the reception and interpretation of

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drive signals to an electronic display of set-top converter 14. To the contrary, Fong matches an audio signal of a television signal receivable by a television with a second audio signal representative of the sound generated by the television, and makes no use of set-top converter 14 in the process. Applicant notes that Figs. 4B and 5 of Fong make no illustration of the set-top converter 14, and accordingly respectfully submits that Fong does not teach or suggest the reception of drive signals to the electronic display of the set-top converter by a controller of a display interface device, as recited by the claims of the invention.

Frett was cited for its disclosure of a light emitting diode (LED) display 18 on a receiver that displays the channel to which the receiver is tuned, but also fails to cure the deficiency of the Fong reference described above. Specifically, Frett operates to detect the currently tuned-to channel of a set-top converter by *analyzing the optical output of an electronic display* of the set-top converter, *not by receiving and interpreting drive signals input to the electronic display* of the set-top converter in accordance with the invention.

Accordingly, neither Fong nor Frett, individually or in combination, teaches or suggests:

a display interface device for use in determining a currently tuned-to channel of a set-top converter box having an electronic display, said *electronic display indicating said currently tuned-to channel in response to drive signals provided thereto by said set-top converter device*, said display interface device comprising an electrical connection to said electronic display, *said electrical connection being adapted to communicate said drive signals, a controller, said controller being connected to said electronic display by said electrical connection and receiving said drive signals transmitted to said electronic display, wherein said controller receives and interprets said drive signals to generate information representative of said currently tuned-to tuned channel* (claim 1),

a system for determining viewership of channels tunable by a set-top converter box having an electronic display, said system comprising a display interface device connected to said electronic display and a viewership collection meter connected to said display interface, said viewership meter periodically storing a channel to which said set-top converter is tuned, wherein *said channel to which said set-top converter is tuned is determined by said display interface by receiving and interpreting drive signals transmitted to said electronic display of said set-top converter* and communicated to said viewership collection meter, and wherein said viewership collection meter stores said channel and forwards it to a predetermined

location at selected times (claim 11) or

a method of determining a channel to which a set-top converter box is tuned using a display interface, *said set-top converter comprising an electronic display that is driven by drive signals, said method comprising receiving drive signals at said display interface, determining a channel to which said set-top converter box is tuned by sampling said drive signals, generating a coded representation of said determined channel* and outputting said coded representation (claim 16).

Heider was cited for its disclosure of plural seven-segment display elements in an electronic display using a multiplexing scheme. Unno was cited for its disclosure of a control unit 20 that supplies scan signals to a decoder 23 synchronously with the generation of the segment signal to the seven-segment display 22. Devlin was cited for its disclosure of a seven-segment LED display that accepts ASCII code. However, none of Heider, Unno and Devlin cure the above-identified deficiencies of Fong and Frett, namely that none of the cited references, individually, or in combination, teach at least the steps of receiving and interpreting drive signals input to the electronic display of the set-top converter by a controller of a display interface device in accordance with the invention.

Claims 2 through 10, claims 12 through 15 and claims 18 through 20 depend from claims 1, 11 and 16, respectively, and are believed allowable for the same reasons applicable to the independent base claims. For at least the reasons noted above, Applicant submits that the present invention as recited in claims 1 through 20 is allowable over the prior art of record. Withdrawal of the rejection to claims 1 to 16 and 18 to 20 under 35 U.S.C. § 103(a) is thus respectfully requested.

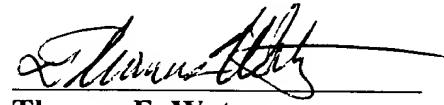
CONCLUSION

Applicant believes that the present Amendment is responsive to each of the points raised by the Examiner in the Office Action, and submits that Claims 1-20 of the application are in condition for allowance. Favorable consideration and passage to issue of the application at the Examiner's earliest convenience are earnestly solicited.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE**IN THE SPECIFICATION:**

Please modify the paragraph beginning on line 15 of page 30, as follows:

The collection meter 18 includes Audio interface circuits 32, a communications module 26, a digital signal processor (DSP) controller 27, a flash memory 28 to store parameters and programming information for the DSP controller 27, a CODEC [30] 29 to provide for compression and decompression of data (e.g., audio or video information) in accordance with predetermined mathematical algorithms, a real time clock 30, and a power supply and voltage supervisor 31. The DSP controller 27 may be programmed to provide functionalities such as, tuning to cable channel frequencies, detection of the state of the television (e.g., powered ON or OFF), detection of the channel being viewed, communication to the communications module 26, management of storage of snapshot information (e.g., time stamp), reception and storage of information related to a telephone number of a central collection site and time for sending snapshot information to the central site, dial-up capability to contact the central site and to upload the snapshot information, and a capability to receive time and reset the onboard teal time clock during the upload. Additional features and functionalities may be provided as user requirements change by reprogramming the DSP controller 27. As illustrated, the DSP controller 27 receives information over line 20 from the display interface board 22 (from connection J2).

IN THE CLAIMS:

Please amend claims 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 17, 19 and 20, as follows:

2. (Amended) The display interface as recited in claim 1, wherein said electronic display comprises at least one [seven-segment] display element, and wherein said [seven-segment] display element is adapted to display an alphanumeric character representation of said currently tuned-to channel of said set-top converter box.

3. (Amended) The display as recited in claim 2, wherein said drive signals are provided

to plural [seven-segment] display elements in said electronic display using a multiplexing scheme in order to display each alphanumeric character of said currently tuned-to channel, and wherein said drive signals are input to said controller and sampled to determine said currently tuned-to channel.

4. (Amended) The display interface as recited in claim 3, wherein said drive signals comprise scan signals provided over scan lines that selectively enable one [seven-segment] display element in said electronic display and segment signals provided over segment lines that drive each segment of said [seven-segment] display element, [said] wherein said scan lines and said segments lines are input to predetermined pins of an input/output port of said controller in order to determine said currently tuned-to channel.

5. (Amended) The display interface as recited in claim 4, wherein said information representative of said tuned channel comprises an ASCII value representative of said currently tuned-to channel, and wherein said controller outputs said ASCII value to a [viewership] collection meter connected to said display interface via a second electrical connection.

6. (Amended) The display interface as recited in claim 5, wherein said [viewership] collection meter comprises an audio matching circuit, said audio matching circuit comparing a first audio signal of a predetermined channel tuned by said [viewership] collection meter with a second audio signal output by a television to which said set-top converter is connected, wherein if said first audio signal and said second audio signal match, said [viewership] collection meter determines that said channel [to] which said set-top converter box is displaying [tuned] is said predetermined channel.

8. (Amended) The display interface as recited in claim 7, wherein said second device comprises a [viewership] collection meter, and wherein said [viewership] collection meter stores said information representative of said currently tuned-to channel and forwards it to a predetermined location at selected times.

9. (Amended) The display interface as recited in claim 8, wherein said information representative of said tuned channel comprises an ASCII value representative of said currently tuned-to channel, and wherein said controller outputs said ASCII value to said [viewership] collection meter via said second electrical connection.

11. (Amended) A system for determining viewership of channels tunable by a set-top converter box having an electronic display, said system comprising:

a display interface device connected to said electronic display; and
a [viewership] collection meter connected to said display interface, said [viewership] collection meter periodically storing a channel to which said set-top converter is tuned,
wherein said channel to which said set-top converter is tuned is determined by said display interface by receiving and interpreting drive signals transmitted to said electronic display of said set-top converter and communicated to said [viewership] collection meter, and wherein said [viewership] collection meter stores said channel and forwards it to a predetermined location at selected times.

12. (Amended) The system for determining viewership of channels tunable by a set-top converter box as recited in claim 11, wherein said [viewership] collection meter further comprises an audio matching circuit, said audio matching circuit comparing a first audio signal of a predetermined channel tuned by said [viewership] collection meter with a second audio signal output by a television to which said set-top converter is connected, wherein if said first audio signal and said second audio signal match, said [viewership] collection meter determines that said channel [to] which said set-top converter box is displaying [tuned] is said predetermined channel.

13. (Amended) The display interface as recited in claim 11, wherein said electronic display comprises at least one [seven-segment] display element, and wherein said [seven-segment] display element is adapted to display an alphanumeric character representation of said currently tuned-to channel of said set-top converter box.

14. (Amended) The display interface as recited in claim 13, said display interface

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comprising a controller, wherein said drive signals are provided to plural [seven-segment] display elements in said electronic display using a multiplexing scheme in order to display each alphanumeric character of said currently tuned-to channel, and wherein said drive signals are input to said controller and sampled to determine said currently tuned-to channel.

15. (Amended) The display interface as recited in claim 14, wherein said drive signals comprise scan signals provided over scan lines that selectively enable one [seven-segment] display element in said electronic display and segment signals provided over segment lines that drive each segment of said [seven-segment] display element, [said] wherein said scan lines and said segments lines are input to predetermined pins of an input/output port of said controller in order to determine said currently tuned-to channel.

17. (Amended) The method as recited in claim 16, wherein said electronic display comprises at least one [seven-segment] display element, and said drive signals comprise scan signals provided over scan lines that enable each [seven-segment] display element and segment signals provided over segment lines that drive each segment of said [seven-segment] display element, said step of determining a channel to which said set-top converter box is tuned further comprising:

- (a) determining if a scan line for said [seven-segment] display element is active;
- (b) if said scan line is active at step (a), then determining which of said segment lines are active to determine character being displayed by said [seven-segment] display element; and
- (c) repeating steps (a) and (b) for each [seven-segment] display element in said electronic display.

19. (Amended) The method as recited in claim 18, wherein said step of outputting said coded representation comprises serially transmitting said ASCII value to a [viewership] collection meter.

20. (Amended) The method as recited in claim 19, further comprising:

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storing, at said [viewership] collection meter, said ASCII value; and
forwarding said ASCII value at predetermined times to a central collection site.